REMARKS

Careful consideration has been given to the Official Action of March 10, 2006, and reconsideration of the application as amended is respectfully requested.

The Examiner has objected to claims 1, 3, 5-8, 11, 12, 14, 15 and 17-19 because of enumerated informalities.

Claims 1-3, 5-7, 10, 11, 15, 18, 19, and 22 are rejected under 35 U.S.C. 102 as being anticipated by Chandar et al. (WO 02/088803).

Claims 8, 9, 12, 14, 17, 20 and 21 are indicated as containing allowable subject matter.

Claim Objections

The claims have been amended to overcome the objections which have been raised by the Examiner and each of the Examiner's objections has been carefully considered and appropriate amendatory action has been taken. In general, each of the objections noted by the Examiner has been responded to based on the observations made by the Examiner. One notable exception is with respect to claim 6 where "comprising" as suggested by the Examiner is incorrect and should remain – comprises –.

With regard to the inconsistencies concerning claims 11, 12, 14 and 17 in respect of

inconsistent use of reference numerals, claim 12 has been rewritten in independent form and claims 13-22 have been amended to depend directly or indirectly from claim 12. It is respectfully submitted that this overcomes the Examiner's objection.

With regard to the parameters of attenuation, this is expressed as 'dbB/KM' which is consistent with the values used to designate the other parameters. In order to provide antecedent support in the specification amendatory action has been taken on page 11.

Claims Rejection

The cited prior art Changdar et al (WO 02/0888803 A2) teaches a dispersion optimized fiber having low dispersion slope in the range of wavelength between from 1530 to 1625 nm and yet has optimized mode field diameter to achieve low bending induced loss at 1550 nm and 1600 nm wavelength.

The disclosed dispersion optimized optical fiber comprises a center core (1), two claddings (2) and (3), a ring core (4) and the outer glass region (5) and having refractive indices of each regions n_1, n_2, n_3, n_4, and n_5 respectively and also having each region radius a_1, a_2, a_3 and a_4 respectively without considering the outer glass region (5) are mentioned as below.

$n_1 > n_4 > n_5 > n_2 > n_3$

$0.008 > (n_1-n_5) > 0.0075$	(n_1-n_5) – about 0.007	a_1 – about 2.8 μm
$0.0015 > (n_4-n_5) > 0.0012$	(n_4-n_5) – about 0.0014	a_2 – about 4.3 μm
$-0.001 < (n_2-n_5) < -0.0006$	(n_2-n_5) – about –0.0005	a_3 – about 6.3 μm
$-0.0015 < (n_3-n_5) < -0.0008$	(n_3-n_5) - about –0.0012	a_4 – about 9.2 μm

The above disclosed dispersion optimized optical fiber is having the following **main** characteristics.

a) Attenuation	about $\leq$ 0.22 dB/Km
b) Dispersion at 1530 to 1565 nm	about 2.5 to 6.0 ps/nm*km
c) Dispersion at 1565 to 1625 nm	about 3.9 to 8.6 ps/nm*km
d) Dispersion slope	about $\leq$ 0.05 ps/nm^2*km
e) Mode field diameter (MFD)	about 8.3 $\pm$ 0.6 μm

According to the prior art, the disclosed dispersion optimized optical fiber is observed as having the effective area typically about 50 μm^2. From the above, disclosed ranges of refractive index and radius of each region does not result in having higher effective area and high mode field diameter (MFD) optical fiber.

The disclosed fiber having lower effective area causes a non-linear effect (for example, four-wave mixing, self phase modulation, cross phase modulation etc.) for long distance transmission (for example, more than 200 Km). Hence, the above disclosed fiber is not suitable for longer length distance transmission without repeaters.

In order to achieve the dispersion optimized fiber having higher effective area typical value 70 μm^2 and higher mode field diameter (MFD) typical value 9.6 μm, the present invention provides various refractive index values and radius ranges of each region of optical fiber.

It has been surprisingly observed that reducing the radius a_1 of center core (1), reducing the radius a_3 of ring core (3), increasing the refractive index n_3 of ring core (3), and also reducing the refractive index n_2 of clad region (2) results in producing an optical fiber having higher effective area, low dispersion slope and high mode field diameter (MFD).

It will become apparent that the claimed dispersion optimized optical fiber according to the present invention, the refractive index and radius of each region are as mentioned below (symbols and numerals are made similar to the prior art for ease of understanding).

$$n_1 > n_4 > n_5 > n_2 = n_3$$

$0.008 > (n_1-n_5) > 0.007$	(n_1-n_5) – about 0.007	a_1 – about 2.7 μm
$0.0018 > (n_4-n_5) > 0.0014$	(n_4-n_5) – about 0.0016	a_2 – about 6.3 μm
$-0.0005 < (n_2-n_5) < -0.0007$	(n_2-n_5) – about –0.0006	a_3 – about 6.3 μm
$-0.0005 < (n_3-n_5) < -0.0007$	(n_3-n_5) - about –0.0006	a_4 – about 8.8 μm

From the above, the major changes in the refractive index and radius from the prior art will become clear from the following statements.

i) Lower limit of refractive index n_1 of center core (1) is reduced from 0.0075 to 0.007

ii) Refractive index n_4 of ring core (4) is increased from 0.0014 to 0.0016

iii) Refractive index n_3 of clad region (3) is reduced from –0.0012 to –0.0006

iv) Radius a_4 of ring core (4) is reduced from 9.2 to 8.8 μm

v) Center core (1) radius a_1 is reduced from 2.8 to 2.7 μm

According to the present invention, the claimed dispersion optical fiber has higher effective area typical value 70 μm^2, higher mode field diameter 9.6$\pm$ 0.4 μm and also low dispersion slope less than 0.08 ps/nm*km which is suitable for long distance transmission (for example, about 400 Km).

These represent a difference in kind as the results are unobvious and warrant allowance of all claims reciting these characteristics.

By reason of the above action and comments, it is respectfully submitted that the rejection of the claims on Chandar under 35 U.S.C. 102 is improper and early and favorable reconsideration of the application is earnestly solicited.

Respectfully submitted,

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